What is claimed is:

1. A gene delivery complex comprising
foreign genetic material and a non-viral vector,
wherein the vector has a first site having specific affinity for the foreign genetic material and a second site having specific affinity for a receptor on an antigen presenting cell.

2. The gene delivery complex of Claim 1, wherein the foreign genetic material is selected from the group consisting of RNA and DNA.

3. The gene delivery complex of Claim 1, wherein the foreign genetic material encodes a reverse-transcriptase dependent virus or a mutant reverse-transcriptase dependent virus.

4. The gene delivery complex of Claim 3, wherein the foreign genetic material is DNA encoding at least a substantial portion of a replication-defective human immunodeficiency virus.

5. The gene delivery complex of Claim 3 or 4, wherein the foreign genetic material is DNA encoding at least a substantial portion of an integration-defective human immunodeficiency virus.

6. The gene delivery complex of Claim 5, wherein the foreign genetic material is DNA encoding at least a substantial portion of an integrase negative mutant of a dual-tropic primary isolate of a human immunodeficiency virus.

7. The gene delivery complex of Claim 6, wherein the DNA further includes one or more stop codons in one or more of the reading frames of the integrase gene.

8. The gene delivery complex of Claim 1, wherein the complex is selected from the group consisting of DNA conjugates of sugars, polyethylenimine, polyethylenimine derivatives, and mixtures thereof.

9. The gene delivery complex of Claim 8, wherein the complex is a DNA conjugate of sugar-modified polyethylenimine.

10. The gene delivery complex of Claim 8, wherein the complex is a DNA conjugate of glucose.

11. The gene delivery complex of Claim 8, wherein the complex has a specific affinity for the mannose receptor.

12. The gene delivery complex of Claim 1, wherein the antigen presenting cell is a Langerhans cell.

13. The gene delivery complex of Claim 1, wherein the antigen presenting cell is a dendritic cell.

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14. The gene delivery complex of Claim 1, wherein the receptor is a mannose receptor.

15. Method of transducing cells with foreign genetic material comprising the steps of exposing the cells to the gene delivery complex described in any one of Claims 1 - 10.

16. Method of making a gene delivery complex comprising the steps of
(a) selecting a target cell having a receptor site,
(b) selecting a delivery complex as described in any one of Claims 1-10,
(c) exposing the cell to the gene delivery complex under conditions suitable for receptor-mediated endocytosis.

17. Method of preventive and therapeutic immunization for animals by exposing the animal to a gene delivery complex described in any one of Claims 1-10.

18. Method of preventive and therapeutic immunization for animals against reverse-transcriptase-dependent virus infection, the steps comprising isolating dendritic cells from the animal,
exposing the cells to the gene delivery complex described in Claim 17, and reintroducing the cells to the body of the animal.

19. Method of preventive and therapeutic immunization for animals against reverse-transcriptase-dependent virus infection, the steps comprising exposing the animal to the gene delivery complex described in Claim 17 on the skin or on mucosa surfaces.

20. Method of treating active virus infection, the steps comprising:
treating a patient in need thereof with a drug combination suitable for suppressing viral load,
immunizing the patient with the gene delivery complex of any one of Claims 1 to 10, and
continuing treatment with a drug combination suitable for suppressing viral load until immune response develops,
and monitoring for rebound of the patient's viral load; and in the event viral load rebounds, restarting treatment with the drug combination, or another drug combination suitable for suppressing viral load and immunizing the patient with the gene delivery complex of any one of Claims 1 to 10.

21. The method of Claim 20, wherein the active virus infection is an HIV infection.

22. Method of transcutaneous genetic immunization, the steps comprising complexing foreign genetic material with a non-viral vector selected from the group consisting of sugar, polyethylenimine, polyethylenimine derivatives, and mixtures thereof, and applying the complex to the skin or mucosa surfaces of an animal.